

# Great Meadows National Wildlife Refuge, Massachusetts, USA: A Wetland of Distinction

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Great Meadows National Wildlife Refuge is an approximately 100-hectare wetland complex located in suburban eastern Massachusetts, about 26 km northwest of Boston (Figure 1). It is comprised of two complexes that fall within the floodplain of the Sudbury and Concord Rivers. It lies within the Southern New England Coastal Plains and Hills Ecoregion, an area comprised of generally flat areas with a few low hills (Griffith et al. 2009).

Great Meadows NWR was established to protect and manage the freshwater wetlands for federally protected migratory birds (Figure 2). The refuge, with its wetlands and surrounding waters, are easily accessible for boating and fishing as well as by land. It provides opportunities for nature observation and environmental education, while supporting multiple protected plant and animal wetland species. Great Meadows is identified on Massachusetts' BioMap2 (Natural Heritage & Endangered Species Program 2012) as being Core Habitat with some Critical Natural Landscape and includes Priority Natural Communities, with most of it mapped as Habitat for Species of Conservation Concern that includes a large area of Forest Core and numerous vernal pools.

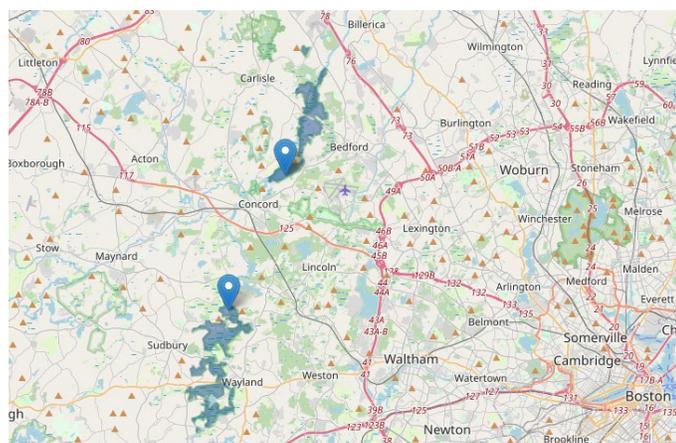


Figure 1. Location of Great Meadows National Wildlife Refuge in eastern Massachusetts, USA. The refuge is represented by two main complexes shown in blue: the Concord Unit (top) and the Sudbury Unit (bottom). (Source: U.S. Fish and Wildlife Service)

As part of the National Wildlife Refuge System (a network of federal land and waters for the protection of wildlife administered by the U.S. Fish and Wildlife Service), Great Meadows protects biological diverse wetland flora and supports significant numbers of wetland-depen-



Figure 2. A view of Great Meadows NWR showing marshland and open water important for waterfowl. (Source: Wikimedia 2010)



Figure 3. Great blue heron (*Ardea herodias*). (Photo by Ralph Tiner)

dent fauna, such as birds and fish. Among the most common animals in the wetlands and shallow water impoundments are muskrat (*Ondatra zibethicus*), great blue heron (*Ardea herodias*; Figure 3), red-winged blackbird (*Agelaius phoeniceus*) and various waterfowl including mallard (*Anas platyrhynchos*), black duck (*Anas rubripes*), wood duck (*Aix sponsa*), blue-winged teal (*Spatula discors*; Figure 4), and Canada goose (*Branta canadensis*). Other fauna of interest include common moorhen (*Gallinula chloropus*) and umber shadowdragon (*Neurocordulia obsoleta*) – an emerald dragonfly, plus state endangered birds: least bittern (*Ixobrychus exilis*), pied-billed grebe (*Podilymbus podiceps*; Figure 5), upland sandpiper (*Bartramia longicauda*), American bittern (*Botaurus lentiginosus*), and two state threatened species grasshopper sparrow (*Ammodramus savaannarum*) and king rail (*Rallus elegans*). Great Meadows also harbors the largest genetically distinct populations of threatened Blanding's turtle (*Emydoidea blandingii*) in the Northeast (Figure 6).

Area forests are mainly central hardwoods with some transition hardwoods, such as elm (*Ulmus sp.*), ash (*Fraxinus sp.*), and red maple (*Acer rubrum*), plus red pine (*Pinus*



Figure 4. Pair of blue-winged teal (*Spatula discors*). (Photo by Ralph Tiner)



Figure 5. Pied-billed grebe (*Podilymbus podiceps*). (Photo by Ralph Tiner)



Figure 6. Blanding's turtle (*Emydoidea blandingii*). (Photo by U.S. Fish and Wildlife Service)

*resinosa*) and white pine (*Pinus strobus*). Buttonbush (*Cephalanthus occidentalis*) is a dominant wetland shrub (Figure 7) while cattail (*Typha* sp.) is perhaps the most abundant marsh plant. American water lotus (*Nelumbo lutea*) is also present in open water areas. Unique flora include endangered species, such as Acadian quillwort

(*Isoetes acadensis*), violet wood sorrel (*Oxalis violacea*), pod grass (*Scheuchzeria palustris*), and lake quillwort (*Isoetes lacustris*), as well as the threatened Long's bulrush (*Scirpus longii*), Britton's violet (*Viola brittoniana*), and Engelmann's umbrella-sedge (*Cyperus engelmannii*). In many places, invasive species such as water chestnut (*Trapa natans*) and purple loosestrife (*Lythrum salicaria*), have displaced plant species of high waterfowl value like bur-reed (*Sparganium* sp.) and roundhead bulrush (*Scirpoides holoschoenus*) (USFWS website <https://www.fws.gov/refuge/great-meadows>). Continued effort is needed for wildlife management to control exotic plants such as purple loosestrife and water chestnut.

While Great Meadows NWR facilitates such ecological connectivity, it is also recognized as a place for environmental education and for its aesthetic/cultural heritage value. Exemplary ecosystem services include flood storage/mitigation, water quality improvement, and passive outdoor recreation (e.g., birdwatching and ecotourism). For more information about the refuge, contact the U.S. Fish and Wildlife Service at [fw5rw\\_emnwr@fws.gov](mailto:fw5rw_emnwr@fws.gov).



Figure 7. Buttonbush (*Cephalanthus occidentalis*) (Photo from Plant Image Library; Creative Commons Attribution-Share Alike 2.0 Generic)

## REFERENCES

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